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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/757,351 | 01/14/2004 | Peter Durr | MLSE 1027-2 / P00162 | 3332 |

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| EXAMINER | |
|---|---|
| HOLLINGTON, JERMELE M | |
| ART UNIT | PAPER NUMBER |
| 2829 | |

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/757,351 | DURR, PETER | |
| | Examiner | Art Unit | |
| | Jermele M. Hollington | 2829 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 January 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ~~04/04~~. 06/04 /mkh
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because there are no labels in boxes in Figs. 1-2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: item 900 in Fig. 9. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Sandstrom (6618185).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Sandstrom discloses a method to detect one or a plurality of defective pixels (110 and 210a-210d) in a spatial light modulator (30 or 200), comprising the actions of: providing an electromagnetic radiation source (via source 10) to illuminate said spatial light

modulator (30 or 200), arranging a reference pattern [see Fig. 1] in said spatial light modulator (30 or 200), illuminating [via 10] said spatial light modulator (30 or 200), determining [via computer 66] a position of a reference pixel (pixel 110)in said spatial light modulator (200) by detecting [via computer 66] a relayed image of said reference pattern [see Fig. 1] in a detector arrangement (65), arranging a first pattern (200a) in said spatial light modulator(30 or 200), illuminating [via source 10] said spatial light modulator (30 or 200), detecting [via computer 66] a relayed image of said first pattern (200a) in said detector arrangement (65), arranging at least a second pattern (200b) in said spatial light modulator (200), illuminating [via 10] said spatial light modulator (200), detecting [via 66] a relayed image of said at least a second pattern (200b) in said spatial light modulator (200) and analyzing [via computer 66] said relayed images of said first pattern (200a) and said at least a second pattern (200b) to detect differences between said images and theoretical images thereof [see Figs. 11-13].

Regarding claim 2, Sandstrom discloses said first and second patterns are chessboard patterns [see col. 20, line 50- col. 21, line 37], where the first chessboard pattern is inverted to the second chessboard pattern.

Regarding claim 3, Sandstrom discloses the relayed image is detected by a CCD camera [see col. 11, lines 20-52].

Regarding claim 4, Sandstrom discloses the projection of a SLM pixel is bigger than a CCD pixel [see cols. 12-13].

Regarding claim 5, Sandstrom discloses single pixels (210a-210d) in the spatial light modulator (200) are not resolved in said detector (65).

Regarding claim 6, Sandstrom discloses a spatial filter (70) between the detector (65) and the spatial light modulator (30 or 200) is adapted to vary the degree of resolution on said detector (65).

Regarding claim 7, Sandstrom discloses at least one of said first (200a) and second (200b) patterns is detected by illuminating [via 10] said pattern at least twice and detecting the relayed images separately.

Regarding claim 8, Sandstrom discloses at least one of said first (200a) and second (200b) patterns is comprised of only non-deflected (210a) and fully deflected (110a) pixels.

Regarding claim 9, Sandstrom discloses said fully deflected pixels (110a) correspond to a maximum degree of extinction by means of diffraction.

Regarding claim 10, Sandstrom discloses said chessboard patterns are comprised of only non-deflected (black area) and fully deflected pixels (white area).

Regarding claim 11, Sandstrom discloses said chessboard patterns are comprised of only non-deflected (black area) and partially deflected pixels (gray area).

Regarding claim 12, Sandstrom discloses said fully deflected pixels (white area) correspond to a maximum degree of extinction by means of diffraction.

Regarding claim 13, Sandstrom discloses said partially deflected pixels (gray area) correspond to partial extinction by means of diffraction.

Regarding claim 14, Sandstrom discloses said first and second patterns are each detected a plurality of times [via computer 66], where the pixels in said patterns are set to different degrees of deflection before each detection event.

Regarding claim 15, Sandstrom discloses said chessboard patterns are comprised of only fully-deflected (white area) and partially deflected (gray area) pixels.

Regarding claim 16, Sandstrom discloses said chessboard patterns are comprised of pixels being in a first partially deflected state and a second partially deflected state.

Regarding claim 17, Sandstrom discloses a method to detect at least one defective pixel (110 and 210a-210d) in a spatial light modulator (30 or 200) comprising numerous pixel elements, comprising the actions of: detecting a relayed image of a first chessboard pattern [see col. 20, line 50- col. 21, line 37] (200a) of pixels in said spatial light modulator (30 or 200) by said detector (65), detecting a relayed image of a second chessboard pattern (100) of pixels in said spatial light modulator (30 or 200), which is inverted to the first chessboard pattern (200), by said detector (65), analyzing [via computer 66] the relayed images of said first (200) and second (100) chessboard patterns to detect differences between said detected images and theoretical images thereof [see Figs. 11-13].

Regarding claim 18, Sandstrom discloses the relayed image is detected by a CCD camera [see col. 11, lines 20-52].

Regarding claim 19, Sandstrom discloses the projection of a SLM pixel is bigger than a CCD pixel [see cols. 12-13].

Regarding claim 20, Sandstrom discloses single pixels (210a-210d) in the spatial light modulator (200) are not resolved in said detector (65).

Regarding claim 21, Sandstrom discloses a spatial filter (70) between the detector (65) and the spatial light modulator (30 or 200) is adapted to vary the degree of resolution on said detector (65).

Regarding claim 22, Sandstrom discloses at least one of said first (200a) and second (200b) patterns is detected by illuminating [via 10] said pattern at least twice and detecting the relayed images separately.

Regarding claim 23, Sandstrom discloses said chessboard patterns are comprised of only non-deflected (black area) and fully deflected pixels (white area).

Regarding claim 24, Sandstrom discloses said chessboard patterns are comprised of only non-deflected (black area) and partially deflected pixels (gray area).

Regarding claim 25, Sandstrom discloses said fully deflected pixels (white area) correspond to a maximum degree of extinction by means of diffraction.

Regarding claim 26, Sandstrom discloses said partially deflected pixels (gray area) correspond to partial extinction by means of diffraction.

Regarding claim 27, Sandstrom discloses said first and second patterns are each detected a plurality of times [via computer 66], where the pixels in said patterns are set to different degrees of deflection before each detection event.

Regarding claim 28, Sandstrom discloses said chessboard patterns are comprised of only fully-deflected (white area) and partially deflected (gray area) pixels.

Regarding claim 29, Sandstrom discloses said chessboard patterns are comprised of pixels being in a first partially deflected state and a second partially deflected state.

Regarding claim 30, Sandstrom discloses identifying a SLM reference pixel in a detector pixel grid (see cols. 16-17).

Regarding claim 31, Sandstrom discloses a method to detect at least one defective pixel (110 and 210a-210d) in a spatial light modulator (30 or 200), comprising the action of: making

an image of a first chessboard pattern (200) unsharp so that a regular chessboard pattern becomes a uniform background (white area) at a detector plane (200) and a defective pixel (210a) becomes an irregularity (black area) in said uniform background at said plane (200) and detectable by a detector (detector arrangement 65).

Regarding claim 32, Sandstrom discloses making an image of a second chessboard pattern (100) unsharp so that a regular chessboard pattern becomes a uniform background (white area) at a detector plane and a defective pixel (110) becomes an irregularity (black area) in said uniform background at said plane (200) and detectable by a detector (detector arrangement 65).

Regarding claim 33, Sandstrom discloses the relayed image is detected by a CCD camera [see col. 11, lines 20-52].

Regarding claim 34, Sandstrom discloses the projection of a SLM pixel is bigger than a CCD pixel [see cols. 12-13].

Regarding claim 35 and 41, Sandstrom discloses said chessboard patterns are comprised of only non-deflected (black area) and fully deflected pixels (white area).

Regarding claim 36 and 42, Sandstrom discloses said chessboard patterns are comprised of only non-deflected (black area) and partially deflected pixels (gray area).

Regarding claim 37 and 43, Sandstrom discloses said fully deflected pixels (white area) correspond to a maximum degree of extinction by means of diffraction.

Regarding claim 38 and 44, Sandstrom discloses said partially deflected pixels (gray area) correspond to partial extinction by means of diffraction.

Regarding claim 39 and 45, Sandstrom discloses said chessboard patterns are comprised of only fully-deflected (white area) and partially deflected (gray area) pixels.

Regarding claim 40 and 46, Sandstrom discloses said chessboard patterns are comprised of pixels being in a first partially deflected state and a second partially deflected state.

Regarding claim 47, Sandstrom discloses identifying a SLM reference pixel in a detector pixel grid (see cols. 16-17).

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Vogt et al (5296891), Sampsell et al (5323002), Markandy et al (5504504), Barnick et al (6751005), Sandstrom (6285488 & 6813062), Fateley et al (6859275), Maeda et al (6169282) disclose a defect inspection method and apparatus thereof.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (571) 272-1960. The examiner can normally be reached on M-F (9:00-4:30 EST) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (517) 272-2034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jermele M. Hollington
Patent Examiner
Art Unit 2829

JMH
May 26, 2005